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IS 3369 (1965): Puddler, Animal Drawn [FAD 21: Farm Implements and Machinery]



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Indian Standard
**SPECIFICATION FOR
PUDDLER, ANIMAL DRAWN**

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

SPECIFICATION FOR PUDDLER, ANIMAL DRAWN

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Indian Standard

SPECIFICATION FOR PUDDLER, ANIMAL DRAWN

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 November 1965, after the draft finalized by the Farm Implements and Machinery Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 The puddler is an implement specially designed for quick and efficient preparation of paddy fields with standing water after initial ploughing. It breaks up the clods and churns the soil and thereby reduces the number of operations to get the desired tilth.

0.3 The puddler may have a number of puddling units (*see 2.2*) depending upon the size (*see 3.1*) but most commonly used puddler in the country has only three puddling units. The puddling units each having four paddles (*see 2.1 and Fig. 1*) are mounted on an axle. The axle with the puddling units is freely mounted on two bearings fitted on a sturdy frame made of wood or metal. This implement is generally worked by a pair of animals.

0.4 It is pointed out that the requirements in regard to the materials included in this specification are only the minimum and the use of other materials having characteristics equivalent to or better than those specified in this standard is not precluded.

0.5 This standard is related to the manufacturing and trade practices prevailing in the country.

0.6 The Ministry of Food and Agriculture has desired that in order to make the standards more useful to those manufacturers who fabricate various agricultural implements and machinery on a small scale, it is necessary at this stage to include a typical design giving complete details for their information and guidance along with the standard the text of which shall be based on the policy decision taken by ISI on design standardization. Accordingly, a typical design as suggested by the Ministry giving complete details is included in the standard only for information and guidance. It is, however, pointed out that it is not in any way binding to those who do not wish to follow this design.

0.7 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated,

expressing the result of a test, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements for puddler used in wet paddy fields and drawn generally by a pair of animals.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Paddle — The flat mild steel member in the shape of a blade which breaks up the clods and churns the soil.

2.2 Puddling Unit — A unit consisting of four paddles connected to each other by a metal cross.

3. SIZE

3.1 The size of the puddler (see Fig. 1) shall be its maximum working width and this shall be determined by measuring the distance between the extreme points of the two outside puddling units. The size of the puddler shall be at least 725 mm (see Note).

NOTE — The size of the puddler may be as large as 2 m or even more. But, generally, the largest size of the puddler used in the country is of 2 m and this can be drawn conveniently by a pair of animals.

4. SHAPE AND DIMENSIONS

4.1 Shape — The shapes of the various parts of a typical puddler are shown in Fig. 1.

4.2 Dimensions — The dimensions of the various parts of the puddler (see Fig. 1), other than those specified in the text, are with reference to a particular type of the puddler and are for guidance only.

5. WEIGHT

5.1 The weight of the puddler including its beam shall be within a range of 30 to 40 kg.

6. DESCRIPTION

6.1 The puddler shall have the following main parts and their assembly is shown in Fig. 1 (see P 6):

a) Frame;

*Rules for rounding off numerical values (*revised*).

- b) Puddling unit:
- 1) Paddles,
 - 2) Metal cross;
- c) Axle;
- d) Bearings;
- e) Beam;
- f) Handle; and
- g) Handle supports.

7. MATERIALS

7.1 The requirements of the materials used for the various parts of the puddler shall be as given in Table 1.

TABLE 1 REQUIREMENTS OF MATERIALS FOR THE VARIOUS PARTS OF THE PUDDLER, ANIMAL DRAWN

SL No.	NAME OF PARTS	MATERIAL	APPLICABLE STANDARD	GRADE
(1)	(2)	(3)	(4)	(5)
i)	Frame	Wood or mild steel	IS : 399-1963*, IS : 808-1957† or IS : 1731-1961‡	— — —
ii)	Paddle	Mild steel	IS : 226-1962§	—
iii)	Metal cross	Mild steel or cast iron	IS : 226-1962§, or IS : 210-1962	— 15
iv)	Axle	Mild steel	IS : 226-1962§	—
v)	Bearings	Cast iron or suitable well-seasoned wood impregnated with oil	IS : 210-1962 , or IS : 399-1963*	15 —
vi)	Beam	Wood	IS : 399-1963*	—
vii)	Handle	Wood	IS : 399-1963*	—
viii)	Handle supports	Mild steel (angle section)	IS : 226-1962§	—

*Classification of commercial timbers and their zonal distribution (*revised*).

†Specification for rolled steel beam, channel and angle sections.

‡Dimensions for steel flats for structural and general engineering purposes.

§Specification for structural steel (Standard quality) (*third revision*).

||Specification for grey iron castings (*revised*).

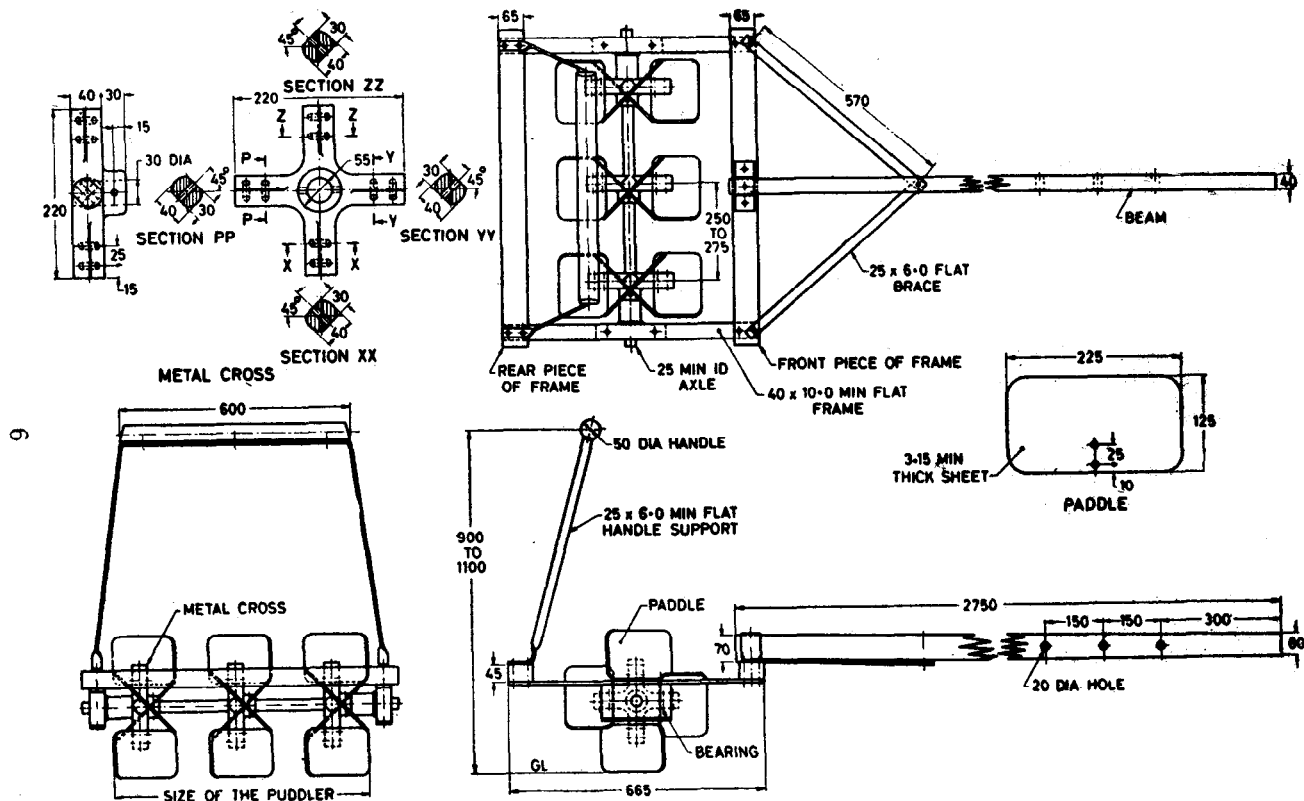


FIG. 1

8. FRAME

8.1 The frame of the puddler shall consist of the front piece, the rear piece and the side pieces (*see* Fig. 1). The frame may be of mild steel flats, steel angle section or wood of suitable dimensions.

9. PUDDLING UNIT

9.1 The centre-to-centre distance between the two puddling units (*see* 2.2) shall be at least 250 mm (*see* Fig. 1) and shall not exceed 275 mm. The number of the puddling units in the puddler shall depend upon the size (*see* 3.1).

9.1.1 Paddles — The paddles shall be fabricated from mild steel sheet having minimum thickness of 3.15 mm. Each paddle shall be made 225 mm long and 125 mm broad. The paddles shall be securely riveted to the metal cross (*see* 9.1.2).

9.1.2 Metal Cross — The metal cross to hold four paddles shall be fabricated from mild steel flat of at least 5×55 mm size. It may also be of cast iron with suitable dimensions as a single unit (*see* Fig. 1). It shall have a suitable central opening to allow the passage of the axle (*see* 10.1) and shall be fixed in position by pinser studs.

10. AXLE

10.1 The mild steel axle shall be made of a bar of not less than 25 mm in diameter. The axle may also be of mild steel pipe having an internal diameter of 25 mm.

11. BEAM

11.1 One end of wooden beam shall be suitably fixed to the frame with the help of braces (*see* Fig. 1) and the other end to the yoke for hitching the animals.

12. HANDLE

12.1 The wooden handle shall be attached to the handle supports (*see* Fig. 1), the ends of which in turn shall be attached to the frame. The diameter and the length of the handle shall be not less than 50 mm and 600 mm respectively. The height of the top of the handle from the ground level shall be between 900 and 1 100 mm.

12.1.1 Handle Supports — The handle supports shall be fabricated from mild steel flats having minimum dimensions of 25×6.0 mm or angle section having minimum dimensions of $25 \times 25 \times 5.0$ mm.

13. BEARINGS

13.1 If the bearings are of cast iron they shall be so assembled that it shall be easy to lubricate and replace them when desired.

14. SAMPLING AND ACCEPTANCE

14.1 Unless otherwise agreed to between the purchaser and the supplier, the sampling plan and criteria for conformity given in Appendix A shall be followed.

15. WORKMANSHIP AND FINISH

15.1 The riveting or bolting shall be satisfactory in all respects. The exposed metallic parts shall be painted with rust-preventive anti-corrosive paint. The axles and bearings shall be coated with rust-proof grease prior to assembly. The timber parts of the puddler shall be painted before assembly.

16. MARKING

16.1 The puddler shall be marked with the following particulars:

- a) Manufacturer's name and recognized trade-mark, if any;
- b) Year of manufacture; and
- c) Size of the puddler.

16.1.1 The marking shall be done on a metallic plate soundly riveted on a non-wearing part of the puddler.

16.1.2 Each puddler may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

APPENDIX A

(Clause 14.1)

SAMPLING OF PUDDLERS, ANIMAL DRAWN

A-1. SCALE OF SAMPLING

A-1.1 Lot — In any consignment all the puddlers of the same type, shape and size and manufactured from the same materials under relatively similar conditions of manufacture shall be grouped together to constitute a lot.

A-1.2 For ascertaining the conformity to this specification, the test shall be carried out separately for each lot.

A-1.3 The number of puddlers to be sampled from a lot for ascertaining the conformity to the requirements of this specification shall be according to col 2 of Table 2.

**TABLE 2 SCALE OF SAMPLING AND PERMISSIBLE
NUMBER OF DEFECTIVES**

NUMBER OF PUDDLERS IN THE LOT	FOR VISUAL AND DIMEN- SIONAL TESTS		FOR TESTS OTHER THAN VISUAL AND DIMENSIONAL	
	Number of Puddlers in the Sample	Permissible No. of Defec- tive Puddlers	Number of Puddlers in the Sample	Permissible No. of Defec- tive Puddlers
(1)	(2)	(3)	(4)	(5)
Up to 100	5	0	2	0
101 to 300	13	1	3	0
301 „ 500	32	3	5	0
501 „ 1000	50	5	8	1
1 001 and above	80	7	13	2

A-1.3.1 The puddlers shall be selected at random from the lot. To ensure the randomness of selection a random number table as agreed to between the purchaser and the supplier shall be used. In case such a table is not available, the following procedure shall be used:

Starting from any puddler, count them as 1, 2, 3,.....up to r and so on in one order where r is the integral part of N/n (N being the number of puddlers in the lot and n the number of puddlers to be selected in the sample). Every r th puddler thus counted shall be withdrawn to give the required number of puddlers in the sample.

A-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-2.1 Tests for Visual and Dimensional Characteristics — The puddlers selected at random according to **A-1.3.1** shall be examined for the visual and dimensional characteristics. A puddler failing to satisfy any one or more of these requirements shall be regarded as defective. The lot shall be considered as conforming to the requirement for these characteristics, if the number of defective puddlers in the sample does not exceed the number given in col 3 of Table 2.

A-2.2 Tests Other Than Visual and Dimensional — If the lot conforms in **A-2.1** to the requirements for visual and dimensional characteristics, a sub-sample of size given in col 4 of Table 2 shall be taken from the puddlers selected in **A-1.3.1**. Each of the puddlers in the sub-sample shall be tested for the requirements of characteristics other than visual and dimensional. A puddler not satisfying anyone or more of these requirements shall be regarded as defective. The lot shall be considered to conform to these requirements, if the number of defectives in the sub-sample does not exceed the number given in col 5 of Table 2.

(Continued from page 2)

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